

Clean Set of Amended Claims

1. (Amended) A driving unit in a drum type washing machine comprising:

a tub comprising plastic and including an opened front, a closed rear wall, and a sidewall extending from a periphery of the rear wall to the opened front, wherein the tub is cylindrical;

a drum mounted rotatably in the tub;

a bearing housing comprising metal, and including a cylindrical aperture therethrough defining an inner circumference, wherein the bearing housing is mounted proximate to a central portion of the rear wall of the tub by insert injection molding;

a shaft passing through the bearing housing, the shaft having one end connected to the drum;

at least one bearing mounted between the shaft and the bearing housing for supporting the shaft;

a stator fixed at a central portion of the rear wall of the tub, the stator including a magnetic core having a stack of layers of magnetic material and a winding part having a coil wound thereon for forming a magnetic force; and

a rotor comprising a sidewall, a rear wall and a permanent magnet fixed to the sidewall, wherein the rotor is coupled to the shaft.

3/4. (Amended) A driving unit as claimed in claim 1, wherein the at least one bearing comprises a front bearing and a rear bearing, and wherein the bearing housing has steps formed on front and rear portions of the inner circumference thereof for supporting the front bearing and the rear bearing, wherein the steps are configured to fix the respective bearings therein.

4/5. (Amended) A driving unit as claimed in claim 4, wherein the step formed at the front portion of the inner circumference of the bearing housing is configured to support a rear end of the front bearing, and the step formed at the rear portion of the inner circumference of the bearing housing is configured to support a front end of the rear bearing.

5/6. (Amended) A driving unit as claimed in claim 1, wherein the at least one bearing comprises a front bearing and a rear bearing, and wherein the shaft has a front end portion fixed to a spider in a rear wall of the drum, and a region of the shaft between the spider and the front bearing comprises a brass bushing attached thereon.

6/7. (Amended) A driving unit as claimed in claim 1, further comprising a stator supporter inserted between the rear wall of the tub and the stator.

9. (Amended) A driving unit as claimed in claim 1, wherein the rotor comprises:

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a bent portion formed along a circumference of the sidewall^{of the rotor}, wherein the bent

portion is configured for supporting magnets fitted to an inside of a front portion of the sidewall^{of the rotor}.

10.

(Amended) A driving unit as claimed in claim 1, wherein the rotor comprises:

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a plurality of cooling fins formed in the rear wall^{of the rotor}, wherein each cooling fin is

formed in a radial direction thereof and configured for blowing air toward the stator for cooling;

and

a plurality of cooling holes configured for ventilation.

11. 12.

(Amended) A structure as claimed in claim 1, wherein the rotor further includes:

a hub at a center of the rear wall of the rotor having a hole therethrough configured to receive at least one fastening member for coupling the rotor to the shaft which passes therethrough, and

fastening holes and positioning holes both formed around the through hole in the hub of the rotor at fixed intervals, the fastening holes for fastening a connector serration coupled to an outer circumference of the rear end portion of the shaft exposed to rear of the rear bearing, and the positioning holes for positioning an assembly position of the connector.

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15. (Amended) A driving unit as claimed in claim 1, wherein the tub includes:
a hub comprising an external circumference defining an outer side of the hub,
wherein the hub is fixed in the rear wall of the tub and has the bearing housing is inserted
therein, and
fastening bosses disposed on an outer side of the hub at fixed intervals and
configured for fastening the stator to the rear wall of the tub with fastening members.

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17. (Amended) A driving unit in a drum type washing machine comprising:
 a cabinet;
 a tub of plastic mounted inside the cabinet;
 a metallic bearing housing comprising a cylindrical aperture therethrough defining
 an internal circumference, wherein said metallic bearing housing is disposed in a central portion
 of a rear wall of the tub, and the metallic bearing housing further comprises steps on the inner
 circumference for supporting bearings therein;

a drum mounted inside the tub, wherein the drum comprises a rear wall;

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a shaft connected to the drum for transmission of a driving power from a motor
 to the drum, wherein the shaft has a front end portion fixed to a spider in a rear wall of the
 drum, a brass bushing press fit on a region of the shaft from a portion exposed between a rear
 of the spider and the front bearing for prevention of rusting of the shaft, and steps on an outer

B circumference thereof for fixing mounting positions of ^{the} a front bearing and ^{the} a rear bearing on the shaft;

[a front bearing and a rear bearing, each of which are mounted on the outer circumference of the shaft at opposite ends thereof, respectively;]

a rotor comprising metal coupled to the rear end portion of the shaft, the rotor comprising:

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a bent portion formed along a circumference of the rotor including a setting surface configured for supporting magnets fitted to an inside of a front portion of a sidewall of the rotor extended forward from a periphery of a rear wall of the rotor, and

a hub at a center of the rear wall of the rotor having a hole therethrough for a fastening member, for coupling the rotor to the shaft,

a plurality of cooling fins configured for blowing air toward the stator when the rotor is rotated,

an embossing between adjacent cooling fins on the rear wall of the rotor for reinforcing the rotor, and

a drain hole in each of the embossings,;

a stator fixed to the tub rear wall inward of the rotor;

a connector of plastic configured to connect the shaft to the rotor; and,

a supporter fitted between the rear wall of the tub and the stator for supporting the stator and maintaining a concentricity between the stator and the tub when the stator is mounted to the tub rear wall.

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18.

(Amended) A driving unit in a drum type washing machine comprising:

a cabinet;

a tub mounted inside the cabinet;

a drum mounted inside the tub;

a shaft connected to the drum configured for transmission of a driving force from a motor to the drum;

a front bearing and a rear bearing mounted on an outer circumference of the shaft at opposite end portions thereof, respectively;

a bearing housing comprising metal disposed in a central portion of a rear wall of the tub for supporting the front bearing;

a rotor fixed to the rear end portion of the shaft;

a stator fixed to the tub rear wall inward of the rotor and configured to magnetically communicate with the rotor;

a connector comprising at least one serration fixed between the outer circumference of the shaft in front of the rear bearing and the rotor, and configured, for transmission of a rotating power from the rotor to the shaft; and,

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a bearing bracket fixed to the rear wall of the tub and configured to cover an outside of the rotor and to support the rear bearing.

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20. (Amended) A driving unit in a drum type washing machine comprising:

a cabinet;

a tub of plastic mounted inside the cabinet;

a metallic bearing housing inserted into a central portion of a rear wall of the tub having steps on an inner circumference for supporting bearings therein;

a drum mounted inside of the tub;

a shaft connected to the drum and configured for transmission of a driving power from a motor to the drum, having a front end portion fixed to a spider in the drum rear wall, and a brass bushing fitted on a region of the shaft from a portion exposed between the spider *B2* to *the* front bearing; *B*

no B2

bearings mounted on the outer circumference of the shaft at opposite end portions thereof, respectively; *B*

a rotor comprising metal coupled to the rear end portion of the shaft, the rotor comprising:

a bent portion formed along a circumference thereof having a setting surface configured for supporting magnets fitted to an inside of a front portion of a sidewall of the rotor extended forward from a periphery of a rear wall of the rotor, and

a hub at a center of the rear wall of the rotor having a hole therethrough configured to receive a fastening member, for coupling the rotor to the shaft,

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Contd
a plurality of cooling fins formed around the hub and configured for blowing air toward the stator when the rotor is rotated,

an embossing between adjacent cooling fins on the rear wall of the rotor for reinforcing the rotor, and

a drain hole in each of the embossings;

a stator fixed to the tub rear wall inward of the rotor;

a connector comprising plastic configured to connect the shaft to the rotor;

a supporter fitted between the rear wall of the tub and the stator configured for supporting the stator and maintaining a concentricity between the tub and the stator when the stator is mounted to the tub rear wall; and,

a bearing bracket fixed to the rear wall of the tub to cover an outside of the rotor and support the rear bearing.

C. Please add new claims 21-37 as follows:

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21.

(New) A driving unit for a drum type washing machine, comprising:

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a cylindrical tub including an opened front, a closed rear wall, and a sidewall extending from a periphery of the rear wall to the opened front;

a drum mounted rotatably in the tub;

a shaft having one end connected to the drum;
a stator fixed at a central portion of the rear wall of the tub; and
a rotor attached to a rear end of the shaft, the rotor including a rear wall and a cylindrical sidewall attached to the rear wall, wherein the rotor includes:

a plurality of cooling fins integrated with the rear wall, the cooling fins being configured to blow cooling air toward the stator as the rotor is rotated; and

a plurality of through holes formed in the rear wall and configured for ventilation.

²¹
~~22~~ (New) The driving unit of claim ²⁰~~21~~, wherein the cooling fins comprise portions of the rear wall that have been bent inward to form the cooling fins and the through holes.

²²
~~23~~ (New) The driving unit of claim ²⁰~~24~~, wherein the rotor further includes;
an embossing between adjacent cooling fins on the rear wall of the rotor for reinforcing the rotor, and

a drain hole in each of the embossings.

²³
~~24~~ (New) A washing machine driving unit, comprising:
a bearing housing;

a tub comprising a generally cylindrical enclosure with a hollow interior, an open first tub end and a closed second tub end, wherein the second tub end is molded around the bearing housing;

a stator attached to the exterior of the second tub end;

a shaft rotatably mounted within the bearing housing comprising a first shaft end protruding into the interior of the tub and a second shaft end protruding out the second tub end; and

a rotor attached to the second shaft end.

²⁴ 25. (New) The washing machine driving unit of claim ²³24, wherein the first shaft end is coupled to a drum disposed in the interior of the tub, and the stator and the rotor are configured to cooperate to rotate the shaft within the bearing housing.

²⁵ 26. (New) The washing machine driving unit of claim ²³24, further comprising a reinforcing member that is interposed between the exterior surface of the second tub end and the stator.

²⁶ 27. (New) The washing machine driving unit of claim ²³24, further comprising a connector, wherein the connector is coupled to the second shaft end and the rotor is coupled to the connector.

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~~28~~. (New) The washing machine driving unit of claim ²⁶~~27~~, wherein the connector has a vibration mode different from a vibration mode of the rotor.

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~~29~~. (New) The washing machine driving unit of claim ²⁷~~28~~, wherein the connector comprises a resin.

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~~30~~. (New) The washing machine driving unit of claim ²³~~24~~, wherein the rotor further comprises a plurality of cooling fins and a plurality of ventilation holes.

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~~31~~. (New) The washing machine driving unit of claim ²⁹~~30~~, wherein both the cooling fins and the ventilation holes are formed by bending portions of a rear wall of the rotor inward towards the stator.

³¹
~~32~~. (New) A washing machine driving unit, comprising:
a bearing housing attached to a rear wall of a tub of the washing machine;
a front bearing mounted in the bearing housing;
a bearing bracket attached to the rear wall of the tub;
a rear bearing mounted on the bearing bracket;
a shaft mounted on the front and rear bearings;
a stator attached to the rear wall of the tub; and

a rotor attached to the shaft, wherein the rotor is located between the rear bearing and the stator.

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33. (New) The driving unit of claim ³¹32, wherein the rear wall of the tub is molded around the bearing housing.

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34. (New) The driving unit of claim ³¹32, wherein the rotor comprises:
a cylindrical sidewall; and
a substantially circular rear wall that is attached to the sidewall, wherein portions of the rear wall are bent inward to form apertures in the rear wall and to form cooling fins.

³⁴
35. (New) The driving unit of claim ³¹32, wherein the bearing bracket covers the stator and the rotor.

36. (New) A method of forming a washing machine, comprising:
attaching a bearing housing to a rear wall of a tub of the washing machine by injection molding the rear wall of the tub around the bearing housing;
attaching a stator to the exterior of the tub;
inserting a shaft through the bearing housing; and
attaching a rotor to a first end of the shaft.



37. (New) The method of claim 36, further comprising the step of bending portions of a rear wall of the rotor inward to form apertures in the rear wall, and to form cooling fins on the rotor.

38. (New) The method of claim 36, further comprising the steps of:
attaching a bearing bracket to the exterior of the tub such that the bearing housing covers the rotor;
mounting a rear bearing in the bearing bracket such that a rear end of the shaft is supported by the rear bearing and such that the stator and rotor are positioned between the rear bearing and the exterior of the tub.